Can We Finally Eat That Peanut?

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What is food allergy?

• Food allergy is a specific **immune** response to a food
  • Most commonly caused by IgE antibodies to foods
  • Requires prior sensitization to that food

• There is no FDA approved treatment for food allergy
  • The only accepted management is avoidance of the food and use of self-injectable epinephrine for reactions.

• Food allergy in general, and peanut allergy in particular, appears to be increasing

• Eczema (AKA atopic dermatitis) is a strong risk factor for food allergy
180° on peanut allergy prevention: official guidelines

2000: For high risk infants, it may be reasonable to delay peanut until 3 years of age.

2008: There is no evidence for delaying allergenic foods, including peanut.

2017: High risk infants should introduce age-appropriate peanut-containing food as early as 4 to 6 months of age to reduce the risk of peanut allergy.

Togias et al. Addendum guidelines for the prevention of peanut allergy in the United States. JACI 2017
Infants at high risk for developing allergy, identified by a strong (biparental; parent, and sibling) family history of allergy may benefit from exclusive breastfeeding or a hypoallergenic formula or possibly a partial hydrolysate formula. Conclusive studies are not yet available to permit definitive recommendations. However, the following recommendations seem reasonable at this time:

• Breastfeeding mothers should continue breast feeding for the first year of life or longer. …. Solid foods should not be introduced into the diet of high-risk infants until 6 months of age, with dairy products delayed until 1 year, eggs until 2 years, and peanuts, nuts, and fish until 3 years of age.

4,000-year-old baby feeder

19th Century "banjo bottle"

The wet nurse, 1802, Marguerite Gérard

By 1946, the proportion of newborns exclusively breastfed at hospital discharge was only 38%.
Now it's easy!

Gerber’s NEW Meats for Baby

They’re Armour® Quality Beef! Veal! Liver!

In these new meats produced and brought to you by Gerber’s and Armour, you can see the high quality—you can taste it too! For these meats for your baby have true-meat color, plus the lean-meat goodness for which Armour is famous. And you can get this quality at real savings in time, work and money.

Spend 3 minutes instead of 35 preparing tasty veal for baby. Just heat! No tiresome scraping! You’ll save from 10 to 20 minutes of your precious time with strained beef or liver.

All with important high-quality proteins. So, ask your doctor how early in the first year you can add Gerber’s Meats to baby’s Gerber-good menus of Fruits, Vegetables and Desserts.

All this... and savings, too! Several servings in each can. Gerber’s Strained Meats for tiny babies and Junior Meats for older tots come in one size can at one moderate price. Far less expensive than home-prepared baby meats.

Accepted by the Council on Foods and Nutrition of the American Medical Association

1949 ad
By the mid-1960s the typical age at introduction of solids had decreased from 6-7 months to 4-6 weeks

Backlash against these practices

• Starting in the 1930s, researchers tied infant formula to higher risk of eczema
• In the following decades weak evidence accumulated for protective effect of breast feeding
• In the 1980s, hydrolyzed infant formulas were developed
  • Some evidence that these formulas might reduce the risk of eczema transiently
• Few studies that combined use of hydrolyzed formulas with delayed introduction of solid foods
  • No studies about delayed introduction of peanut alone
Peanut consumption in infants: median 7.1g in Israel vs 0g in UK per month

Peanut allergy prevalence among Jewish children:
Israel: 0.17%
UK: 1.85%

Almost 10 times as much peanut allergy

Du Toit JACI 2008
LEAP study

- 640 infants aged 4-11 months with severe eczema, egg allergy, or both
- About 11% excluded because they had a large SPT at baseline
- Randomized to 2 groups – peanut avoidance or regular peanut consumption
- Final outcome determined by a peanut food challenge at 5 years

82% Reduction Overall

Du Toit NEJM 2015
TABLE I. Summary of addendum guidelines 1, 2, and 3

<table>
<thead>
<tr>
<th>Addendum guideline</th>
<th>Infant criteria</th>
<th>Recommendations</th>
<th>Earliest age of peanut introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severe eczema, egg allergy, or both</td>
<td>Strongly consider evaluation by sIgE measurement and/or SPT and, if necessary, an OFC. Based on test results, introduce peanut-containing foods.</td>
<td>4-6 months</td>
</tr>
<tr>
<td>2</td>
<td>Mild-to-moderate eczema</td>
<td>Introduce peanut-containing foods</td>
<td>Around 6 months</td>
</tr>
<tr>
<td>3</td>
<td>No eczema or any food allergy</td>
<td>Introduce peanut-containing foods</td>
<td>Age appropriate and in accordance with family preferences and cultural practices</td>
</tr>
</tbody>
</table>
What about other foods?

- Now about 6 studies done of egg introduction:
  - Mixed results about efficacy
  - Very high rates of allergic reactions to egg powder used in several studies
  - Extensively cooked egg (“baked egg”) better tolerated
- No studies of tree nuts, fish, shellfish
- Milk data is difficult to interpret
What went wrong?

• We gave broad-sweeping recommendations based on low quality evidence
  • Caveats were ignored
• We reasoned from faulty mechanistic theories
• We gave into the pressure to “do something”
• We underestimated the possibility of harm
Questions that keep me up at night

• What might be the unintended consequences of our new guidelines?
  • Will more screening lead to more false positive diagnoses of peanut allergy and other food allergies?
  • Will screening overwhelm the available medical resources?
  • Will people really introduce peanut earlier?

• In terms of the new treatments that are now in phase III trials:
  • What are the long term outcomes of treatment?
  • What exactly are we treating?
  • In the long term, will these treatments lead to more reactions or fewer?
  • Are there easier ways to reduce anxiety and increase freedom?
Extra slides
Cutaneous exposure through inflamed skin leads to allergy, while oral exposure leads to tolerance.

George du Toit, Teresa Tsakok, Simon Lack, Gideon Lack

Prevention of food allergy
Journal of Allergy and Clinical Immunology, Volume 137, Issue 4, 2016, 998–1010
http://dx.doi.org/10.1016/j.jaci.2016.02.005
Our current study

• Supported by the NIAID
• Goal of
  • Understanding the risk of reaction at introduction among three risk groups
  • Evaluating different screening tests for peanut allergy in infancy
  • Understanding how parents introduce peanut in real life
• Enrolling infants 4 to 11 months old
  • Siblings and children of those with peanut allergy
  • Those with moderate-to-severe eczema
  • Those with other food allergies
Clinical trial

- 59 intervention and 106 control
- Mothers avoided cow's milk, egg, and peanut during the last trimester of pregnancy and lactation
- Infants avoided cow's milk until age 1 (casein hydrolysate supplementation before age 1)
- Egg until 2
- Peanut and fish until 3
In 1865, chemist Justus von Liebig patented an infant formula made of cow’s milk, wheat and malt flour, and potassium bicarbonate.
THE INFLUENCE OF BREAST AND ARTIFICIAL FEEDING ON INFANTILE ECZEMA

CLIFFORD G. GRULEE, M.D., AND HEYWORTH N. SANFORD, M.D.
CHICAGO, ILL.

There is probably no subject in pediatrics that has received so much attention in the last few years as that of infantile eczema.

The use of olive oil only for cleansing purposes. None of the feedings were changed in any way. In the artificially fed infants, 1.5 ounces of boiled cow's milk and 0.1 ounce of cane sugar per pound body weight were used. In all infants cod liver oil, orange juice, cereals, and vegetables were added to the diet.

Chart 1.—Monthly incidence of infantile eczema.
1960s-2000

- Concern about early introduction of solids and decreased breast feeding led to more research in the 1960s and 1970s about the role of breast feeding in allergies.

- With the development of broken down cow’s milk formulas in the 1980s-1990s, more research into effect of infant diet on development of eczema and food allergy.

- Some relatively weak evidence for breastfeeding or hypoallergenic formula to prevent eczema or food allergy.
  - There were no studies of delayed peanut only.
  - Some of the data was fabricated (see retraction in the BMJ from RK Chandra)